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Entrepreneurial Attitude of Agriculture Students in Odisha, India: An Analysis

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Abstract

The study explores the entrepreneurial attitude of agriculture students in Odisha, focusing on their readiness to engage in agribusiness activities. The research, conducted with 569 final-year B.Sc. (Agriculture) students across nine colleges, reveals that the majority (68.55%) exhibit a medium level of entrepreneurial attitude, with a mean score of 80.40. Among the various dimensions analyzed, planning orientation and marketing management ranked highest, indicating strong capabilities in these areas, essential for agribusiness success. However, the entrepreneurial mindset scored lowest, highlighting a need for targeted interventions to enhance this critical component. The study also found minimal influence of socio-demographic factors such as family background, type, and size on students' entrepreneurial attitudes, suggesting that personal experiences and education play a more significant role. Gender differences were observed, particularly in the entrepreneurial mindset, emphasizing the need for gender-sensitive educational approaches. The research concludes that while Odisha's agriculture students possess essential entrepreneurial skills, focused efforts are required to strengthen their mindset and risk-taking abilities to fully harness their potential in the agricultural sector. These findings provide valuable insights for policymakers and educational institutions to tailor entrepreneurship programs more effectively.

Keywords

Entrepreneurial Attitude; Agriculture Students; Odisha; Gender Differences; Socio-demographic Factors

Introduction

Young generation people play a very crucial role in economic development in the agriculture sector in this present digital era. They are very much interested in doing work for themselves and to be independent. They are also eager to solve socio-economic problem

and generate employment in agriculture sector (Boris *et al*., 2022). Therefore, agriculture courses are designed by ICAR (Indian Council of Agricultural Research) in such a way that B.Sc. (Agriculture) students learn how to solve the problems in the agriculture sector and also develop entrepreneurial attitudes among them. Entrepreneurship can be defined as the ability to develop new and innovative ideas and achieve success with them (Kharga *et al*., 2021). It is a dynamic course in the generation of progressive assets (Shailesh, Gyanendra and Yadav, 2013). The drive and aspirations of individuals serve as catalysts, while their entrepreneurial competencies, the adoption of best practices, and supportive socio-economic factors sequentially contribute to achieving success in entrepreneurship (Singh *et al*, 2016).

Many agriculture courses are business oriented and entrepreneurship skills are provided through it (Inegbedion and Islam, 2020). All the SAUs (State Agriculture Universities) in India are involved in teaching, research and extension activities to develop rural areas (Lalitha *et al*., 2022). Universities are playing major role not only in transfer of knowledge but also in generation of business in modern societies (Zollo *et al*., 2017). Entrepreneurial universities are natural and innovative incubators that help their students transform their ideas into real entrepreneurial activities (Etzkowitz, 2001, 2003; Etzkowitz and Leydesdorff, 2000). Fostering and promoting entrepreneurship among students are important objectives of entrepreneurial universities (Kuratko, 2005; Peterman and Kennedy, 2003). Education support by means of providing knowledge and inspiration is important for students in choosing entrepreneurship as career and independent (Turker and Selçuk, 2009). All the agriculture universities are also trying to make their students independent by inculcating entrepreneurship attitude through teaching and research activity. Likewise, agriculture institutes of Odisha, India also gives many entrepreneurship related education to their students by which they can stand their own and become self-sufficient to earn livelihood and secure their income. Several courses are provided with practical exposure where students can develop entrepreneurial attitudes and earn livelihood in the future.

Despite several efforts executed by ICAR and SAUs, every year only 2000 students out of 12000 passout students from SAUs of India, are getting job in public and private sectors and remaining go unemployed. ICAR provides support to the SAUs of India to increase the quality of education (Mahra *et al*., 2015). B.Sc. (Agriculture) passout students are facing many problems in getting employment as they lack necessary agriculture skills. The large number of young people entering agriculture field can either be a burden or a benefit for India's agriculture, depending on the skills they gain and retain (Chandrasekhar, Ghosh and Roychowdhury, 2006). Therefore, the present study was undertaken in which the state Odisha was selected purposively to assess the agriculture students' attitude towards entrepreneurship. Accordingly, the courses can be redesigned to make students skilled and independent in this society.

Methodology

This research adopted a quantitative framework, leveraging cross-sectional data to provide a comprehensive analysis. The respondents were B.Sc. (Agriculture) final year students of all the nine agriculture colleges in Odisha, India. The data required for study of entrepreneurial attitude were collected through a survey questionnaire, which was

developed with the help of non-respondent students, experts and literature such as 1) Entrepreneurial Mindset (Akmaliah, Pihie and Arivayagan, 2016; Bosman, 2019; Davis, Hall and Mayer, 2016; Nabi *et al*., 2017; Ni and Ye, 2018; Walter and Block, 2016;); 2) Risk Orientation (Aliabadi *et al*., 2019; Ataei *et al*., 2021; Do and Dadvari, 2017; Yildirim, N., Çakir, Ö., and Askun, 2016; Schmidt *et al*., 2022; Siddeswari and Gopal, 2021); 3) Planning Orientation (Kerrin, Mamabolo and Kele, 2017; Zarefard and Cho, 2017; Zollo *et al*., 2017); 4) Marketing Management (Martin, 2015; Trivedi, 2017); 5) Socio-cultural Orientation (Hardie, Highfield and Lee, 2020; Kirkley, 2016). For capturing responses on the Entrepreneurial Attitude of the respondents, a three-point Likert scale: Most essential (3), Essential (2) and Not essential (1) was used. Permissions were taken from all the concerned authorities of the study institutions for data collection from the final year students of B.Sc. (Agriculture) and after that, institutions were visited. Good rapport was developed with the faculties and the respondents of the study institutions. Interaction and discussion were made with the professors, assistant professors and students on the objectives framed under the study and data collection process. After that, questionnaires in Google Forms were distributed to all the final year students of agriculture in Odisha students during 2023-24 through personal visits to the colleges one by one individually with the help of concerned faculties and authorities by using WhatsApp groups and emails. The raw samples comprised the 588 returned questionnaires. After screening the data for missing values and outliers, 569 useful questionnaires were considered for analysis through IBM SPSS Statistics 21.

Results

Entrepreneurial Attitude of the Agriculture Students in Odisha

The study assessed the entrepreneurial attitude of the respondents using a sample of 569 respondents. The overall entrepreneurial attitude had a total mean score of 80.40 (SD = 8.17), with the majority of students (68.55%) exhibiting a medium level of entrepreneurial attitude. Among the five factors analyzed, the 'Planning Orientation' ranked highest (Rank I, Average mean score = 2.634), with 62.56% of students in the medium category and 21.62% in the high category. 'Marketing Management' followed closely (Rank II, Average mean score = 2.632), with 52.20% of students in the medium category and 27.06% in the high category. 'Risk Orientation' (Rank III, Average mean score = 2.610) showed that 53.78% of students fell in the medium category, while 26.00% were in the high category. 'Socio-Cultural Orientation' (Rank IV, Average mean score = 2.555) had 53.25% of students in the medium category and 24.96% in the high category. 'Entrepreneurial mindset' ranked the lowest (Rank V, Average mean score = 2.505), with 70.12% of students in the medium category but only 15.82% in the high category. Overall, the results indicate that while students demonstrate strong planning and marketing capabilities, there is room for improvement in fostering a more robust entrepreneurial mindset and risk orientation, as these areas showed lower percentages of students in the high category (Table 1).

Table 1: Rank & Level of Entrepreneurial Attitude (n=569)

Factors of Entrepreneurial Attitude	*Average Mean Score (Score Range 1 to 3)*	*Rank (Based on Average Mean Score)*	*Level*		
			Low	*Medium*	*High*
1. Entrepreneurial Mindset (Based on Total Score Mean=12.53, SD=1.74 where Min Score: 5 & Max Score: 15)	2.505	V	80 (14.06%)	399 (70.12%)	90 (15.82%)
2. Risk Orientation (Based on Total Score Mean= 13.05, SD= 1.74 where Min Score: 5 & Max Score: 15)	2.610	III	115 (20.21%)	306 (53.78%)	148 (26.00%)
3. Planning Orientation (Based on Total Score Mean= 21.07, SD= 2.50 where, Min Score: 8, Max Score: 24)	2.634	I	90 (15.82%)	356 (62.56%)	123 (21.62%)
4. Marketing Management (Based on Total Score Mean= 18.42, SD= 2.32 where, Min Score: 7 & Max Score: 21)	2.632	II	118 (20.74%)	297 (52.20%)	154 (27.06%)
5. Socio-cultural Orientation (Based on Total Score Mean= 15.33, SD=2.16 where, Min Score: 6 & Max Score: 18)	2.555	IV	124 (21.79%)	303 (53.25%)	142 (24.96%)
Overall Entrepreneurial Attitude (Based on Total Score Mean: 80.40, SD: 8.17 where, Min Score: 31 & Max Score: 93)	2.587		86 (15.11%)	390 (68.55%)	93 (16.34%)

Correlation among Variables

In this study, the Spearman's rank correlation analysis was conducted to assess the relationships between various socio-demographic and psychological factors and the entrepreneurial attitude of the respondents. A weak negative correlation was observed between family background and entrepreneurial mindset (ρ = -0.084), indicating minimal impact, though statistically significant. The correlation between family type and entrepreneurial mindset was also negative (ρ = -0.055), but not statistically significant. Similarly, family size and house types showed weak negative correlations with entrepreneurial mindset (ρ = -0.03 and ρ = -0.043, respectively), suggesting that these factors do not significantly influence students' entrepreneurial mindsets. The correlation between family background and risk orientation was weakly negative (ρ = -0.054) and statistically insignificant, and other factors like family type, family size, and house types exhibited even weaker, non-significant correlations with risk orientation. Planning orientation also showed very weak correlations with family background, family type, and family size, with ρ values ranging from -0.019 to 0.047, none of which were

statistically significant. The correlation coefficients for marketing management across all variables were very low (ρ ranging from -0.076 to 0.039), indicating no significant impact from the studied factors. Similarly, the relationship between socio-cultural orientation and the studied variables was negligible, with correlation coefficients close to zero, implying that socio-cultural factors may not play a significant role in shaping entrepreneurial attitudes among the students. Overall, the correlation with entrepreneurial attitude across all variables was weak, with ρ values ranging from -0.049 to 0.019, suggesting that the socio-demographic factors studied do not have a strong influence on the overall entrepreneurial attitude of agriculture students (Table 2).

Table 2: Spearman's Rank Correlations

Sl. No.	*Variables*	*Entrepreneu-rial Mindset*	*Risk Orientation*	*Planning Orientation*	*Marketing Management*	*Socio-cultural Orientation*	*Entrepreneu-rial Attitude*
1.	Family Background	-.084*	-0.054	-0.019	-0.03	0	-0.049
2.	Family Type	-0.055	-0.01	-0.013	-0.076	-0.071	-0.053
3.	Family Size	-0.03	0.015	-0.01	-0.008	-0.025	-0.013
4.	House Types	-0.043	-0.003	0.047	0.039	0.015	0.019
5.	Education of head of the family	-0.041	0.001	0.041	-0.027	0.008	-0.005
6.	Family Annual Income	-0.039	-.091*	-0.022	-0.055	-0.047	-0.061
7.	Parents Land Holding	-0.004	-0.067	-0.068	-0.027	-0.022	-0.051
8.	Economic Aptitude	.243**	.155**	.180**	.129**	.200**	.229**
9.	Social Aptitude	.351**	.322**	.267**	.278**	.297**	.382**
10.	Scientific Aptitude	.243**	.218**	.239**	.226**	.240**	.286**
11.	Decision Making Ability	.259**	.304**	.294**	.283**	.208**	.332**
12.	Leadership Ability	.320**	.346**	.349**	.326**	.288**	.416**
13.	Information Seeking Behaviour	.239**	.209**	.240**	.152**	.257**	.293**

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Entrepreneurial Attitude based on Gender

Hypothesis Test Summary for this Mann-Whitney U Test is given in the table 3 below. The results of the Mann-Whitney U Test reveal notable insights into the entrepreneurial attitudes of male and female students across several dimensions. The analysis indicates a significant difference in the entrepreneurial mindset between the two groups, with male and female students exhibiting varying levels of entrepreneurial mindset (U=33570.5U = 33570.5U=33570.5, Z=−3.18Z = -3.18Z=−3.18, p=0.001p = 0.001p=0.001). This suggests that gender plays a crucial role in shaping the entrepreneurial mindset, necessitating different approaches to foster this mindset effectively in male and female students. However, when it comes to other dimensions such as risk orientation, planning orientation, marketing management, socio-cultural orientation, and overall entrepreneurial attitude, no significant differences were found between the genders. Specifically, the results showed no significant differences in risk orientation (U=39143U = 39143U=39143, Z= −0.266Z = -0.266Z= −0.266, p= 0.79, p = 0.79, p = 0.79), planning orientation (U=38320.5U = 38320.5U = 38320.5, Z= −0.693Z = -0.693Z=

−0.693, p= 0.489p = 0.489p=0.489), marketing management (U=37575.5U = 37575.5U=37575.5, Z=−1.086Z = -1.086Z=−1.086, p=0.278p = 0.278p=0.278), socio-cultural orientation (U=39195.5U = 39195.5U= 39195.5, Z= −0.238Z = -0.238Z= −0.238, p= 0.812, p = 0.812, p = 0.812), and overall entrepreneurial attitude (U=38698U = 38698U=38698, Z=−0.491Z = -0.491Z=−0.491, p=0.623p = 0.623p=0.623). These findings suggest that aside from the entrepreneurial mindset, male and female students exhibit similar attitudes and behaviors in other areas of entrepreneurship. This indicates that while gender-specific interventions may be necessary to address differences in mindset, other aspects of entrepreneurship education can be developed in a more gender-neutral manner (Table 4 and Figure 1).

Table 3: Hypothesis Test Summary (Mann-Whitney U Test)

	Null Hypothesis	*Test*	*Sig.*	*Decision*
1.	The distribution of Entrepreneurial Mindset is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.001	Reject the null hypothesis.
2.	The distribution of Risk Orientation is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.790	Retain the null hypothesis.
3.	The distribution of Planning Orientation is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.489	Retain the null hypothesis.
4.	The distribution of Marketing Management is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.278	Retain the null hypothesis.
5.	The distribution of Socio-cultural Orientation is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.812	Retain the null hypothesis.
6.	The distribution of Entrepreneurial Attitude is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.623	Retain the null hypothesis.
Asymptotic significances are displayed. The significance level is .05.				

Table 4: Mann-Whitney U Test

	Entrepreneurial Mindset	*Risk Orientation*	*Planning Orientation*	*Marketing Management*	*Socio-cultural Orientation*	*Entrepreneurial Attitude*
Mann-Whitney U	33570.5	39143	38320.5	37575.5	39195.5	38698
Wilcoxon W	86545.5	92118	68210.5	67465.5	92170.5	91673
Z	-3.18	-0.266	-0.693	-1.086	-0.238	-0.491
Asymp. Sig. (2-tailed)	0.001	0.79	0.489	0.278	0.812	0.623
Note: Grouping Variable: Gender: Male & Female						

Entrepreneurial Attitude based on Caste

Hypothesis Test Summary (Kruskal-Wallis Test based on Caste) is given in the table 5 below. The Kruskal-Wallis Test was performed to assess whether there were significant

differences in various dimensions of entrepreneurial attitudes — namely, entrepreneurial mindset, risk orientation, planning orientation, marketing management, socio-cultural orientation, and overall entrepreneurial attitude—among agricultural students in Odisha, based on their caste. The test results indicated that there were no statistically significant differences across the caste groups for any of these dimensions. Specifically, the distribution of entrepreneurial mindset was found to be the same across the different caste categories, with a Chi-Square value of 1.890 and an asymptotic significance (p-value) of .389. Similarly, the distribution of Risk Orientation did not differ significantly across caste groups (Chi-Square = 1.990, p = .370), nor did the distribution of planning orientation (Chi-Square = .098, p = .952), marketing management (Chi-Square = 1.682, p = .431), socio-cultural orientation (chi-Square = .664, p = .718), and overall entrepreneurial attitude (Chi-Square = 1.283, p = .527). Since all p-values were greater than the significance level of .05, the null hypothesis, stating that the distributions of these dimensions are the same across caste categories, was retained for each case. This indicates that caste does not significantly influence these aspects of entrepreneurial attitudes among the students surveyed (Table 6 and Figure 2).

Table 5: Hypothesis Test Summary (Kruskal-Wallis Test based on Caste)

	Null Hypothesis	*Test*	*Sig.*	*Decision*
1.	The distribution of Entrepreneurial Mindset is the same across categories of Caste.	Independent-Samples Kruskal-Wallis Test	.389	Retain the null hypothesis.
2.	The distribution of Risk Orientation is the same across categories of Caste.	Independent-Samples Kruskal-Wallis Test	.370	Retain the null hypothesis.
3.	The distribution of Planning Orientation is the same across categories of Caste.	Independent-Samples Kruskal-Wallis Test	.952	Retain the null hypothesis.
4.	The distribution of Marketing Management is the same across categories of Caste.	Independent-Samples Kruskal-Wallis Test	.431	Retain the null hypothesis.
5.	The distribution of Socio-cultural Orientation is the same across categories of Caste.	Independent-Samples Kruskal-Wallis Test	.718	Retain the null hypothesis.
6.	The distribution of Entrepreneurial Attitude is the same across categories of Caste.	Independent-Samples Kruskal-Wallis Test	.527	Retain the null hypothesis.
Asymptotic significances are displayed. The significance level is .05.				

Entrepreneurial Attitude based on Family's Major Occupation

Hypothesis Test Summary (Kruskal-Wallis test based on Family Major Occupation) is given in table 7 below. The Kruskal-Wallis test revealed a significant difference in the distribution of the Entrepreneurial Mindset among different categories of Family Major Occupation, with a Chi-Square value of 19.631 and a p-value of 0.001. This result leads to the rejection of the null hypothesis, indicating that students' entrepreneurial mindset significantly varies based on their family's major occupation. In contrast, no significant differences were found in the distributions of Risk Orientation, Planning Orientation,

Marketing Management, Socio-cultural Orientation, and overall Entrepreneurial Attitude across the different family occupation categories. The p-values for these variables were all greater than 0.05 (0.549, 0.203, 0.265, 0.947, and 0.314 respectively), leading to the retention of the null hypotheses for these factors. These results suggest that while the family's occupation significantly influences the entrepreneurial mindset of students, it does not appear to have a statistically significant impact on their risk orientation, planning orientation, marketing management, socio-cultural orientation, or overall entrepreneurial attitude (Table 8 and Figure 3).

Table 6: Kruskal Wallis Test

	Entrepreneurial Mindset	*Risk Orientation*	*Planning Orientation*	*Marketing Management*	*Socio-cultural Orientation*	*Entrepreneurial Attitude*
Chi-Square	1.890	1.990	.098	1.682	.664	1.283
df	2	2	2	2	2	2
Asymp. Sig.	.389	.370	.952	.431	.718	.527
a. Kruskal Wallis Test						
b. Grouping Variable: Caste						

Table 7: Hypothesis Test Summary (Kruskal-Wallis test based on Family Major Occupation)

	Null Hypothesis	*Test*	*Sig.*	*Decision*
1.	The distribution of Entrepreneurial Mindset is the same across categories of Family major occupation.	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.
2.	The distribution of Risk Orientation is the same across categories of Family major occupation.	Independent-Samples Kruskal-Wallis Test	.549	Retain the null hypothesis.
3.	The distribution of Planning Orientation is the same across categories of Family major occupation.	Independent-Samples Kruskal-Wallis Test	.203	Retain the null hypothesis.
4.	The distribution of Marketing Management is the same across categories of Family major occupation.	Independent-Samples Kruskal-Wallis Test	.265	Retain the null hypothesis.
5.	The distribution of Socio-cultural Orientation is the same across categories of Family major occupation.	Independent-Samples Kruskal-Wallis Test	.947	Retain the null hypothesis.
6.	The distribution of Entrepreneurial Attitude is the same across categories of Family major occupation.	Independent-Samples Kruskal-Wallis Test	.314	Retain the null hypothesis.
Asymptotic significances are displayed. The significance level is .05.				

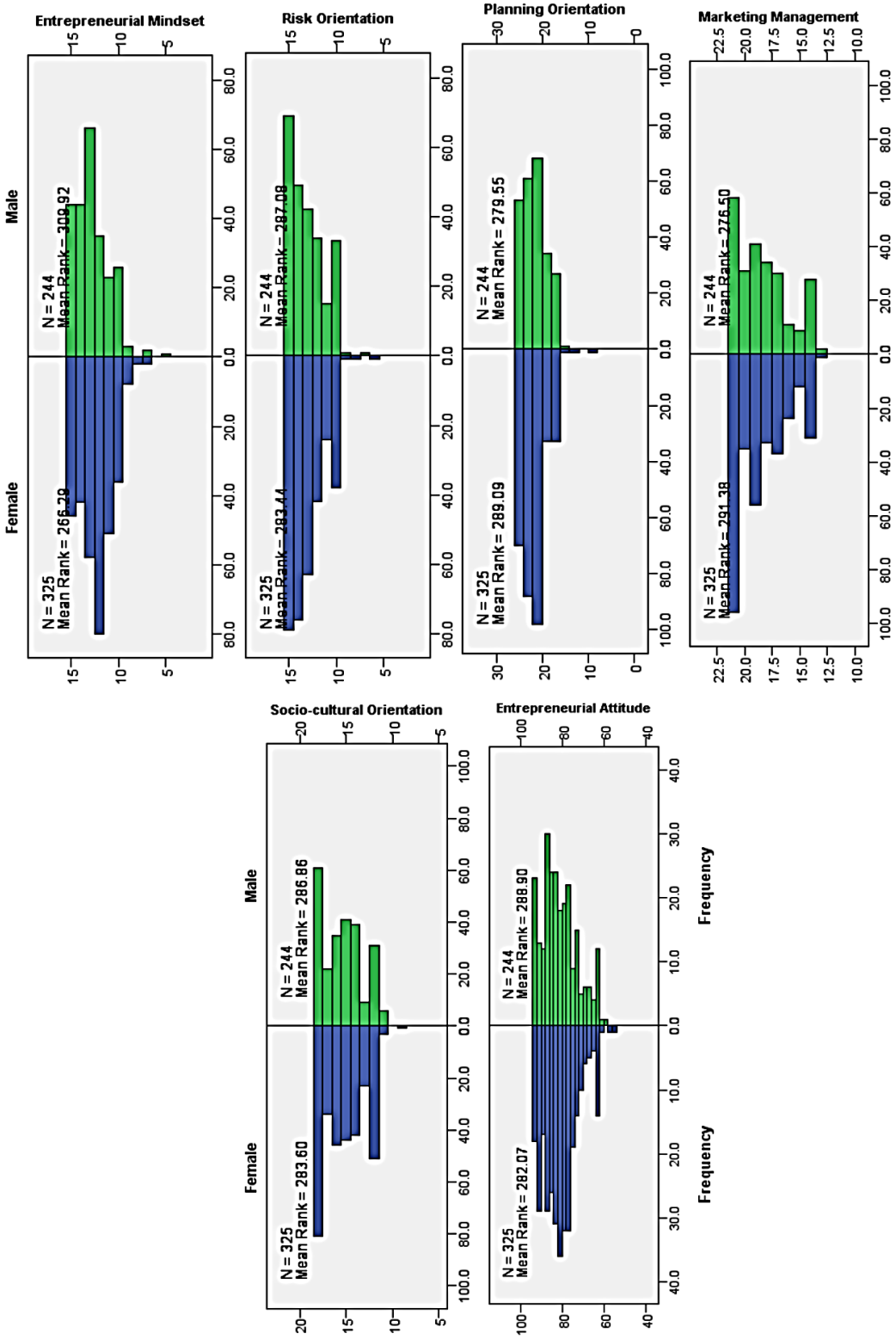

Figure 1: Comparison between Male and Female Students' Attitudes towards Entrepreneurship

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Table 8: Kruskal Wallis Test

	Entrepreneurial Mindset	*Risk Orientation*	*Planning Orientation*	*Marketing Management*	*Socio-cultural Orientation*	*Entrepreneurial Attitude*
Chi-Square	19.631	4.000	7.250	6.453	1.181	5.924
df	5	5	5	5	5	5
Asymp. Sig.	.001	.549	.203	.265	.947	.314
a. Kruskal Wallis Test						
b. Grouping Variable: Family major occupation						

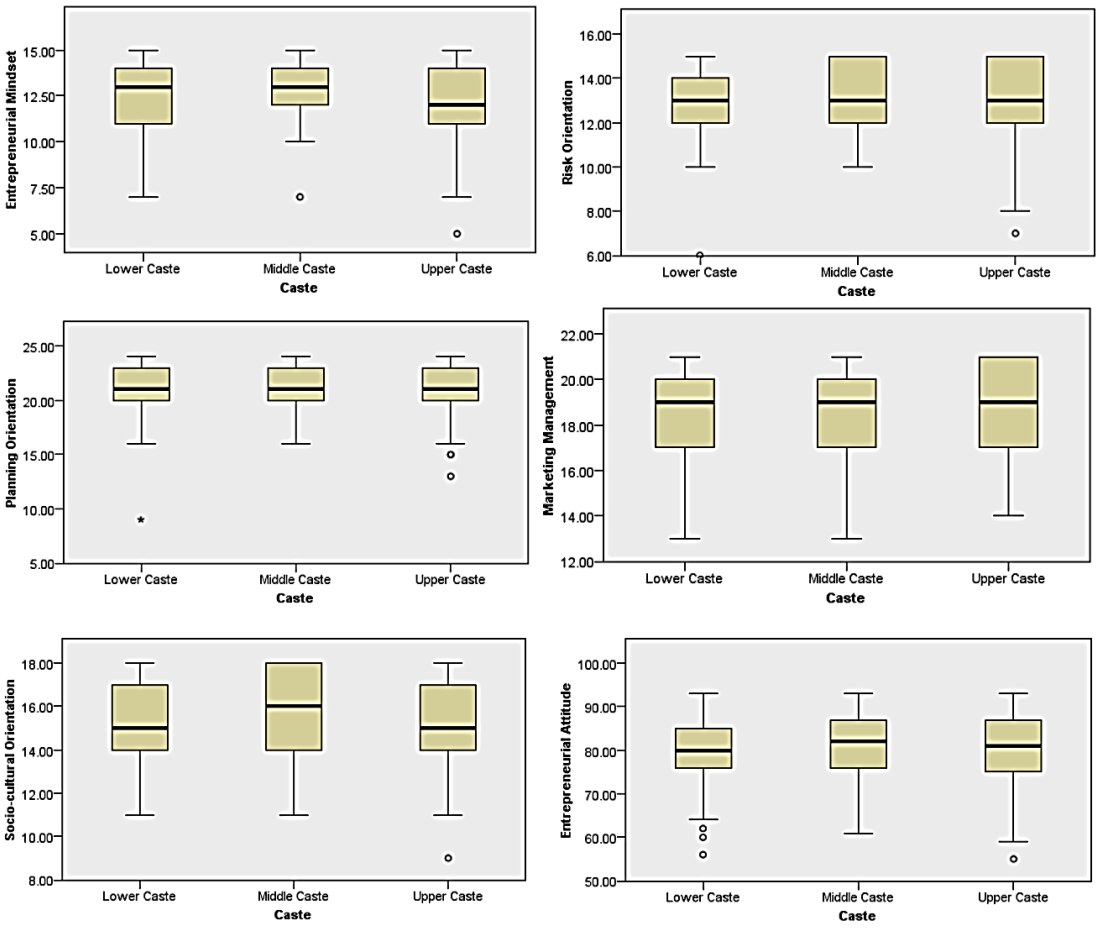

Figure 2: Kruskal Wallis Test with Caste as Grouping Variable

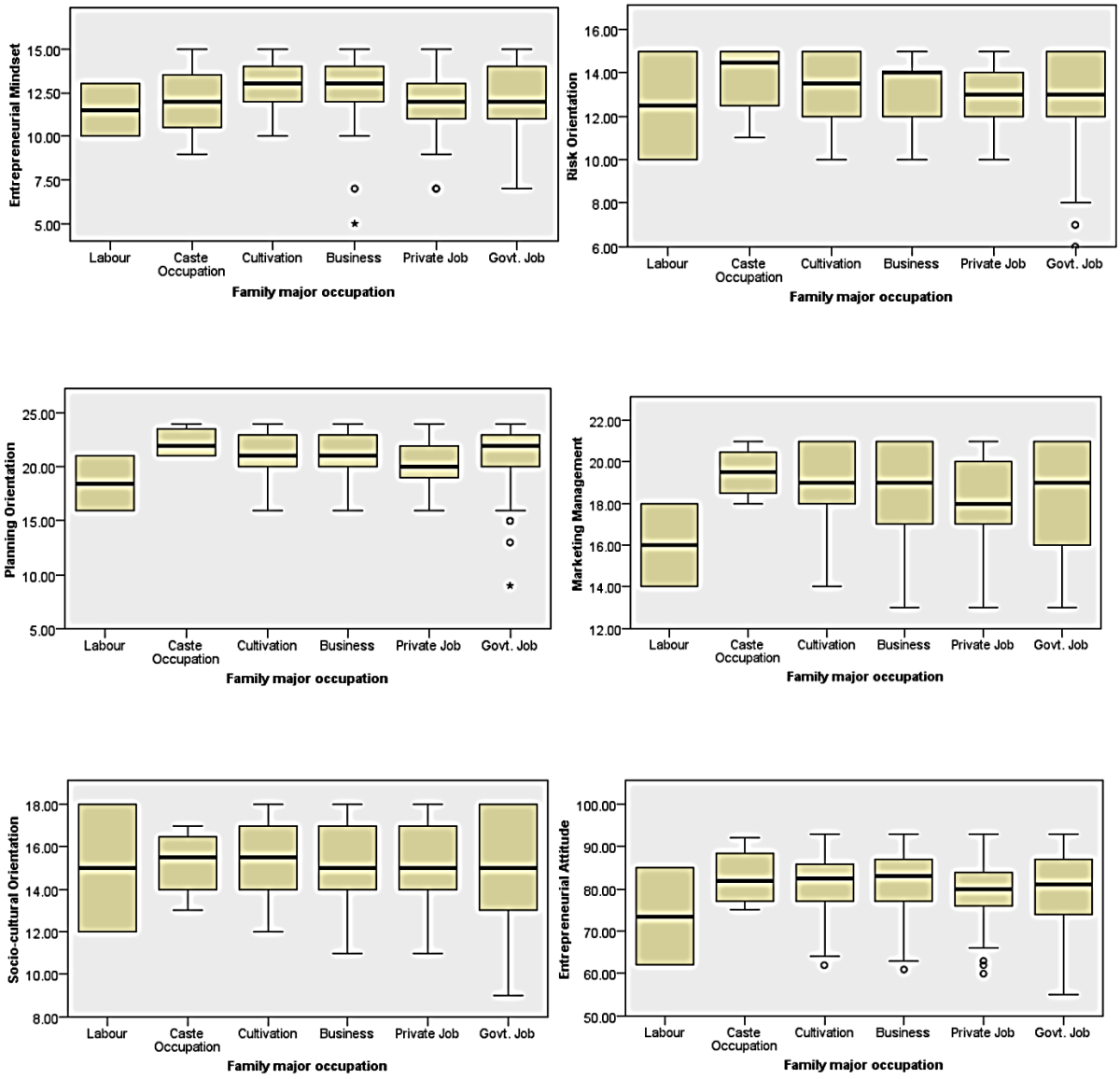

Figure 3: Kruskal Wallis Test with Family Major Occupation as Grouping Variable

Discussion

It was found that agricultural students in Odisha had a moderate level of entrepreneurial attitude, with an average overall mean score of 80.40, where 68.55% of the respondents were in the medium category. Among various components examined, planning orientation has been observed as the strongest and stands in the highest rank with an average mean of 2.634. This simply implies the fact that students are high in capability with regard to planning, which in any entrepreneurial venture is much important for success.

Following marketing products management closely was marketing management, indicating that students are at least sure when it comes to marketing products, a core function in agribusiness. The argument behind the above may be supported by the fact that 27.06% of the students were in the "High" category. However, the Entrepreneurial Mindset component recorded the least ranking with 14.06% of students performing poorly in this regard. This implies some level of concern since good mindsets are crucial for entrepreneurial behaviours. The scores of risk orientation and socio-cultural orientation were moderate, signifying that students are somewhat prepared to take risks and adapt to socio-cultural changes. The areas need to be developed further for strengthening the entrepreneurial attitude among students.

These results indicate that although entrepreneurial base is adequate for students in agriculture colleges in Odisha, an improved form of targeted interventions is needed to develop an enterprising attitude and risk-taking abilities. Such programs would focus on those abilities and further develop this more enterprising cohort to drive agricultural growth and innovation. Spearman's rank correlation analysis pointed out that different socio-demographic characteristics like family background, family type, and family size correlate very weakly with the entrepreneurial mindset and risk orientation or overall entrepreneurial attitude of agriculture students in Odisha. This would mean that these external factors might not influence major changes in entrepreneurial attitudes that are probably more influenced by personal experiences, education, and intrinsic motivations.

This all is in conformity to wider research that the weak correlations of these social-demographic variables with different aspects of entrepreneurial attitude often point to the complexity and multifaceted character of entrepreneurship. Although traditionally relevant, family background and socio-economic conditions could have had their impact reduced with increasing access to education and resources relevant to the exercise of an entrepreneurial function. The fact that most of the correlations in this research were insignificant highlights the possible need for more focused interventions to promote the betterment of personal and educational experiences, rather than the burden being placed heavily on socio-demographic predictors. Future studies should look into other factors, including entrepreneurial education, access to mentorship, and exposure to role models, which might have larger effects on the entrepreneurial attitude of students. This study demonstrates the importance of looking beyond some of the usual suspects in more traditional socio-demographic factors in trying to understand students' entrepreneurial potential and mindset — and that, all the more so in agriculture, where the innovations and adaptability paradigm is getting stronger.

Results of the Mann-Whitney U test showed that there was a difference in the entrepreneurial mindset between male and female students. This shows that gender plays an influencing role of the student in ascertaining how he/she may look at developing his/her entrepreneurial mindset; hence, this could be attributed to other elements like societal expectations, education, or personal motivation. Rejecting the null hypothesis for the entrepreneurial mindset indicates the possibility of a different approach toward fostering the entrepreneurial mindset among the male and female students effectively. In the converse case, the absence of any significant differences in risk orientation, planning orientation, marketing management, socio-cultural orientation, and in general in entrepreneurial attitude across genders suggests that perhaps these dimensions are more

or less common to both genders. This would mean that other than attitude, even the behaviour and strategies shown in entrepreneurship might be similar for both male and female students.

These results suggest that while there is a need to tackle gender-specific differences in the entrepreneurial mindset, other aspects of entrepreneurship education could be developed in a gender-neutral manner. Future research should look into the underlying factors to explain the observed differences in the mindset and how educational interventions could serve to bridge the gap. Kruskal-Wallis test results of entrepreneurial attitudes across different caste groups among agriculture students in Odisha showed no significant variation. In another sense, this would imply some homogeneity in the entrepreneurial attitudes, irrespective of caste, which probably reveals a common approach toward entrepreneurship education or social perceptions about entrepreneurship among these students.

Here, too, a lack of significant difference may indicate that caste does not appear to be a dominant attribute with regard to various entrepreneurship-related attitudes and behaviours, such as entrepreneurial mindset, risk-taking behaviour, planning, marketing skills, or socio-cultural orientation. It would rather be some other factor like the educational background, exposure to enterprise activities, or socio-economic conditions that may have a much stronger critical molding effect on these attitudes. The importance of such a finding is that interventions for promoting entrepreneurship can therefore be applied universally, without laying special emphasis on caste within each group of varying castes. Another study needs to be conducted with samples from different regions and different communities to find out other potential factors and to confirm whether it indeed holds in all these cases.

The fact that varied family occupation backgrounds provide very different levels of exposure to resources and motivation in their respective environments can account for this. Families involved in entrepreneurial businesses or businesses necessitating high levels of autonomy and innovation would motivate their children to acquire such traits and, by doing so, would thereby be more inclined toward the better development of an entrepreneurial mindset. On the other hand, the minor differences that were seen in the other traits of risk orientation, planning orientation, and marketing management will all suggest that these three traits are universally developed among students no matter what family background they belong to. This might be because of the standard educational curricula or society demands for similar kinds of skills from people irrespective of the occupation of their families.

This outlines that, specifically when developing an entrepreneurial mindset among students, targeted interventions and support mechanisms should take into consideration the occupational backgrounds of family members. However, the non-significance of student attributes with respect to all other dimensions suggests that general educational and social influences are important in their development and that support mechanisms developed to enhance entrepreneurial competences would satisfactorily be used with a wide range of students without extensive customisation on the basis of family occupation.

This analysis underpins the importance of understanding multifaceted influences on entrepreneurial attitudes among students, especially in a context like Odisha where family occupation plays an imperative role in ascertaining aspiration and capability.

Conclusion

From the study on the entrepreneurial attitude of agriculture students from Odisha, it emerges that the general attitude of the students is of a medium level of entrepreneurial inclination, but they are strong in terms of the two important criteria for the success of an agri-business: planning orientation and marketing management. However, the lower mindset scores of students indicate a requirement for focused interventions to enhance this important component. This is supported by the research findings that socio-demographic factors such as family background, type, and size hardly influence entrepreneurial attitudes; this would mean that personal experience and education largely shape them. In the characteristics associated with gender orientation, it was found that there were differences requiring the adoption of gender-sensitive strategies; nonetheless, most dimensions of entrepreneurial attitudes remain uninfluenced and unrelated to gender. The further lack of any significant differences across caste groups shows that entrepreneurship education can be made uniform, although family occupation plays a role in the entrepreneurial mindset, and thus targeted support measures should be undertaken based on family background. Although the students have the necessary skills required for entrepreneurship, the mindset and risk-taking abilities are to be enhanced through focused efforts to realize their full potential in the agriculture sector.

References

Akmaliah, Z., Pihie, L. and Arivayagan, K. (2016). Predictors of entrepreneurial mindset among university students. *International Journal of Humanities, Social Sciences and Education*, 3(7): 1–9. DOI: https://doi.org/10.20431/2349-0381.0307001.

Aliabadi, V., Ataei, P., Gholamrezai, S. and Aazami, A. (2019). Components of sustainability of entrepreneurial ecosystems in knowledge-intensive enterprises: The application of fuzzy analytic hierarchy process. *Small Enterprise Research*, 26(3): 288-306. DOI: https://doi.org/10.1080/13215906.2019.1671215.

Ataei, P., Ghadermarzi, H., Karimi, H. and Norouzi, A. (2021). The process of adopting entrepreneurial behaviour: Evidence from agriculture students in Iran. *Innovations in Education and Teaching International*, 58(3): 340-350. DOI: https://doi.org/10.1080/14703297.2020.1734476.

Boris, O., Simonov, A. and Parakhina, V. (2022). Creation of favorable entrepreneurial ecosystems for the development of youth business in agricultural regions of the South of Russia. *IOP Conference Series: Earth and Environmental Science*, 949(1): 012143). Bristol, UK: IOP Publishing. DOI: https://doi.org/10.1088/1755-1315/949/1/012143.

Bosman, L. (2019). From doing to thinking: Developing the entrepreneurial mindset through scaffold assignments and self-regulated learning reflection. *Open Education Studies*, 1(1): 106–121. DOI: https://doi.org/10.1515/edu-2019-0007.

Chandrasekhar, C.P., Ghosh, J. and Roychowdhury, A. (2006). The demographic dividend and young India's economic future. *Economic and Political Weekly*, 41(49): 5055-5064.

Davis, M.H., Hall, J.A. and Mayer, P.S. (2016). Developing a new measure of entrepreneurial mindset: Reliability, validity, and implications for practitioners. *Consulting Psychology Journal: Practice and Research,* 68(1): 21. DOI: https://doi.org/10.1037/cpb0000045.

Do, B.R. and Dadvari, A. (2017). The influence of the dark triad on the relationship between entrepreneurial attitude orientation and entrepreneurial intention: A study among students in Taiwan University. *Asia Pacific Management Review,* 22(4): 185-191. DOI: https://doi.org/10.1016/j.apmrv.2017.07.011.

Etzkowitz, H. (2001). The second academic revolution and the rise of entrepreneurial science. *IEEE Technology and Society Magazine,* 20(2):18-29. DOI: https://doi.org/10.1109/44.948843.

Etzkowitz, H. (2003). Research groups as "quasi-firms": The invention of the entrepreneurial university. *Research Policy,* 32(1): 109-121. DOI: https://doi.org/10.1016/S0048-7333(02)00009-4.

Etzkowitz, H. and Leydesdorff, L. (2000). The dynamics of innovation: From national systems and "Mode 2" to a Triple Helix of university–industry–government relations. *Research Policy,* 29(2): 109-123. DOI: https://doi.org/10.1016/S0048-7333(99)00055-4.

Hardie, B., Highfield, C. and Lee, K. (2020). Entrepreneurship education today for students' unknown futures. *Journal of Pedagogical Research,* 4(3): 401-417. DOI: https://doi.org/10.33902/JPR.2020063022.

Inegbedion, G. and Islam, M.M. (2020). Youth motivations to study agriculture in tertiary institutions. *The Journal of Agricultural Education and Extension,* 26(5): 497-512. DOI: https://doi.org/10.1080/1389224X.2020.1773285.

Kerrin, M., Mamabolo, M.A., and Kele, T. (2017). Entrepreneurship management skills requirements in an emerging economy: A South African outlook. *South African Journal of Entrepreneurship and Small Business Management,* 9: 1–10. DOI: https://doi.org/10.4102/sajesbm.v9i1.111.

Kharga, B.D., Saha, A., Pradhan, K. and Roy, R. (2021). Focusing the relationship of net profit with the determinant attributes of rural entrepreneurs. *Indian Journal of Extension Education,* 57(2): 135-138. https://epubs.icar.org.in/index.php/IJEE/article/view/111776.

Kirkley, W.W. (2016). Entrepreneurial behaviour: The role of values. *International Journal of Entrepreneurial Behavior and Research,* 22(3): 290-328. DOI: https://doi.org/10.1108/IJEBR-02-2015-0042.

Kuratko, D.F. (2005). The emergence of entrepreneurship education: Development, trends, and challenges. *Entrepreneurship Theory and Practice,* 29(5): 577-598. DOI: https://doi.org/10.1111/j.1540-6520.2005.00099.x.

Lalitha, A., Purnima, K.S., Reddy, K.G., Babu, S. and Sambaiah, A. (2022). Strategic role of Indian state agricultural universities (SAUs) in rural development: A review. *Agricultural Reviews,* 43(1): 84-90. DOI: https://doi.org/10.18805/ag.R-2268.

Mahra, G.S., Sharma, V.P., Lenin, V. and Sarkar, S. (2015). Perception of agricultural students and agro-professionals towards agricultural education and skill development in India: Connect and disconnect. *Indian Journal of Extension Education,* 51(3 and 4): 44-48. Available online at: https://acspublisher.com/journals/index.php/ijee/article/view/5309 (accessed on 23 August 2024).

Martin, C. (2015). Needs and perspectives of entrepreneurship education for postgraduate students: A Romanian case study. *Educația Plus,* 12(SI):153-157. https://www.uav.ro/jour/index.php/jpe/article/view/550.

Nabi, G., Linan, F., Fayolle, A., Krueger, N. and Walmsley, A. (2017). The impact of entrepreneurship education in higher education: A systematic review and research agenda. *Academy of Management Learning and Education,* 16: 277–299. DOI: https://doi.org/10.5465/amle.2015.0026.

Ni, H. and Ye, Y. (2018). Entrepreneurship education matters: Exploring secondary vocational school students' entrepreneurial intention in China. *Asia-Pacific Education Researcher*, 27(5): 409–418. DOI: https://doi.org/10.1007/s40299-018-0399-9.

Peterman, N.E. and Kennedy, J. (2003). Enterprise education: Influencing students' perceptions of entrepreneurship. *Entrepreneurship Theory and Practice,* 28(2): 129-144. DOI: https://doi.org/10.1046/j.1540-6520.2003.00035.x.

Schmidt, S., Bohnenberger, M.C., Nodari, C.H. and Da Silva, M.D.J.S. (2022). Gender, entrepreneurial behaviour and firm performance of Brazilian students: Integrating economic and behavioral perspectives. *Heliyon*, 8(1). DOI: https://doi.org/10.1016/j.heliyon.2022.e08750.

Shailesh, K., Gyanendra, S. and Yadav, V.K. (2013). Factors influencing entrepreneurial behaviour of vegetable growers. *Indian Research Journal of Extension Education*, 13(1): 16-19. DOI: http://dx.doi.org/10.2139/ssrn.2570760.

Siddeswari, G.K. and Gopal, P.S. (2021). Factors influencing the entrepreneurial behaviour of women entrepreneurs of self-help groups in Andhra Pradesh. *Journal of Environmental Biology*, 42: 524-533. DOI: https://doi.org/10.22438/eb/42/2(SI)/SI-278.

Singh, R., Nain, M.S., Sharma, J.P. and Mishra, J.R. (2016). Developing agripreneurship for sustainable farm income: Action research study on women farmers of Hapur district, Uttar Pradesh. *Journal of Community Mobilization and Sustainable Development*, 11(1): 127-135. Available online at: https://shorturl.at/hGdL4 (accessed on 23 August 2024).

Trivedi, R.H. (2017). Entrepreneurial-intention constraint model: A comparative analysis among post-graduate management students in India, Singapore and Malaysia. *International Entrepreneurship and Management Journal,* 13(4): 1239-1261. DOI: https://doi.org/10.1007/s11365-017-0449-4.

Turker, D. and Sonmez Selçuk, S. (2009). Which factors affect entrepreneurial intention of university students? *Journal of European Industrial Training,* 33(2): 142-159. DOI: https://doi.org/10.1108/03090590910939049.

Walter, S.G. and Block, J.H. (2016). Outcomes of entrepreneurship education: An institutional perspective. *Journal of Business Venturing,* 31(2): 216–233. DOI: https://doi.org/10.1016/j.jbusvent.2015.10.003.

Yildirim, N., Çakir, Ö. and Askun, O. (2016). Ready to dare? A case study on the entrepreneurial intentions of business and engineering students in Turkey. *Procedia - Social and Behavioral Sciences,* 229: 277-288. DOI: https://doi.org/10.1016/j.sbspro.2016.07.138.

Zarefard, M. and Cho, S.E. (2017). Relationship between entrepreneurs' managerial competencies and innovative start-up intentions in university students: An Iranian case. *International Journal of Entrepreneurship,* 21(3). Available online at: https://www.abacademies.org/articles/relationship-between-entrepreneurs-

managerial-competencies-and-innovative-startup-intentions-in-university-students-an-iranian-cas-6688.html (accessed on 23 August 2024).

Zollo, L., Laudano, M.C., Ciappei, C. and Zampi, V. (2017). Factors affecting universities' ability to foster students' entrepreneurial behaviour: An empirical investigation. *Journal of Management Development*, 36(2): 268-285. DOI: http://dx.doi.org/10.1108/JMD-06-2016-0093.

Author's Declarations and Essential Ethical Compliances

Authors' Contributions (in accordance with ICMJE criteria for authorship)

Contribution	Author 1	Author 2
Conceived and designed the research or analysis	Yes	Yes
Collected the data	Yes	No
Contributed to data analysis & interpretation	Yes	Yes
Wrote the article/paper	Yes	Yes
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The author(s) solemnly declare(s) that this research has not involved any human subject (body or organs) for experimentation. It was not a clinical research. The contexts of human population/participation were only indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of Helsinki Declaration does not apply in cases of this study or written work.

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